

REMARKS/ARGUMENTS

Claims 1, 2, 6, 11, and 15 have been amended. Claims 6, 12, and 17 have been cancelled. Claims 21 and 22 have been added. The foregoing amendment and the following arguments are provided to impart precision to the claims, by more particularly pointing out the invention, rather than to avoid prior art.

35 U.S.C. § 102(b) Rejections

Examiner rejected claims 1-3, 5-12, 15-17 and 20 under 35 U.S.C. § 102(b) as being anticipated by “Architectural Support for Compiler-Synthesized Dynamic Branch Prediction Strategies: Rationale and Initial Results” (hereinafter “August et al.”).

“To anticipate a claim, the reference must teach every element of the claim. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” (Manual of Patent Examining Procedures (MPEP) ¶ 2131.)

Independent claims 1, 11, 15, and 22 include limitations that are not disclosed or suggested by August. In particular, independent claim 1 includes the limitation, or limitation similar thereto, of storing the predicted predicate value in a *speculative predicate register file* and *updating an architectural predicate register file with the actual predicate value*.

Independent claim 11 includes the limitation, or limitation similar thereto, of a *speculative predicate register file* having an input coupled to an output of the calculator, an *architectural predicate register file*, and a pipeline having an actual predicate value output coupled to the architectural predicate register file.

Independent claim 15 includes the limitation, or limitation similar thereto, of a *speculative predicate register file* to store the predicted predicate value, and an *architectural predicate register file* to store an architecturally committed predicate value corresponding to the predicate.

August does not teach such limitations. August specifically discloses predicate-based branch prediction based on multiple schemes, none of which refer to both a speculative predicate register file and an architectural predicate register file. The Examiner states, in the Office Action dated 6/30/2004 which was incorporated by reference by the Office Action dated 1/18/2005, that August taught a speculative predicate register file labeled Pred. Reg. File in both Figs. 4 and 6 of August. (Office Action 6/30/2004, items 13 and 16). Examiner also stated that August taught a predicate table to store historical information, labeled PEP-PAs-BTB of Fig. 6 of August. (Office Action 6/30/2004, item 14).

Furthermore, the August reference states the *counter* used for the prediction is updated when the actual direction of a predicated branch is known. (August, page 87, section 3.3.1, 1st paragraph, last sentence). There is no suggestion or motivation to *updating an architectural predicate register file with the actual predicate value*, as is claimed by Applicant in claim 1. Moreover, there is no suggestion in August to include an *architectural predicate register file* and a pipeline having an actual predicate value output coupled to the architectural predicate register file, as is claimed by Applicant in claim 11. Furthermore, there is no suggestion in August to include an *architectural predicate register file* to store an architecturally committed predicate value corresponding to the predicate, as is claimed by Applicant in claim 15. Thus, August fails to disclose both a speculative predicate register file and an *architectural predicate register file*.

Accordingly, August does not anticipate independent claims 1, 11, and 15. Claims 2-10, 16-17, and 20, and newly added claim 21 depend from one of the foregoing independent claims and thus include the novel claim limitations discussed above. Therefore, August does not anticipate dependent claims 2-10, 16-17, 20, and 21.

Independent claim 22 includes the limitation, or limitation similar thereto, of modifying the predicted predicate value in the predicate register file by setting the predicted predicate value to the actual predicate value if the predicted predicate value and the actual predicate value are unequal.

August does not teach such limitations. Rather, August discloses the *counter* used for the prediction is updated when the actual direction of a predicated branch is known. (August, page 87, section 3.3.1, first paragraph, last sentence). Moreover, the PEP-PAs BTB contains two histories, wherein only one of the two histories is used in determining the branch direction and only that same *history* is updated. (August, page 87, section 3.3.2, first paragraph, fifth sentence).

Although August discloses updating counters and histories, August fails to disclose or suggest modifying the predicted predicate value on the predicate register file by *setting the predicted predicate value to the actual predicate value* if the predicted predicate value and the actual predicate value are unequal, as is claimed by Applicant. Accordingly, August does not anticipate independent claim 22.

35 U.S.C. § 103(a) Rejections

Examiner rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over “Architectural Support for Complier-Synthesized Dynamic Branch Prediction Strategies: Rationale and Initial Results” (hereinafter “August et al.”).

Dependent claim 4 depends from independent claim 1 discussed above and therefore also includes the distinguishing claim limitations. As a result, claim 4 is also patentable.

In view of the above remarks, a specific discussion of the dependent claim 4 is considered to be unnecessary. Therefore, Applicants’ silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding the claim.

CONCLUSION

Applicants respectfully submit the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Naya Chatterjee at (408) 720-8300.

Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 03/15/2005



Naya Chatterjee
Reg. No. 54,680

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA 90025-1026
(408) 720-8300